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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/736,519	12/17/2003	Takashi Tsuboi	00862.023378	4410

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EXAMINER

SMITH, NICHOLAS A

ART UNIT PAPER NUMBER

1742

DATE MAILED: 07/31/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/736,519

Applicant(s)

TSUBOI ET AL.

Examiner

Nicholas A. Smith

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 17 December 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) 8-16 and 18 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-7 and 17 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☒ Claim(s) 8-16 and 18 are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 12/17/03, 8/17/05
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Election/Restrictions

Restriction to one of the following inventions is required under 35 U.S.C. 121:

- I. Claims 1-7 and 17, drawn to an apparatus capable and a method applying a directed flow of electrolyte capable of forming an electrolytic coating in selected areas, classified in class 205, subclass 133
- II. Claims 8-16 and 18, drawn to an apparatus capable and a method of forming an electrolytic coating without mechanical contact, classified in class 205, subclass 147.

The inventions are distinct, each from the other because of the following reasons:

Inventions I and II are directed to related processes and apparatuses. The related inventions are distinct if the inventions as claimed do not overlap in scope, i.e., are mutually exclusive; the inventions as claimed are not obvious variants; and the inventions as claimed are either not capable of use together or can have a materially different design, mode of operation, function, or effect. See MPEP § 806.05(j). In the instant case, invention I uses a shower head to deliver electrolyte to the surface of the substrate and invention II uses an overflow bath to deliver electrolyte to the surface of the substrate, and thus, these two features cannot be used together and have a material different mode of operation, i.e., a method of electrolyte deliver to substrate surface.

During a telephone conversation with Jason Okun a provisional election was made with traverse to prosecute the invention of group I, claims 1-7 and 17. Affirmation

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of this election must be made by applicant in replying to this Office action. Claims 8-16 and 18 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1 and 3-7 are rejected under 35 U.S.C. 102(e) as being anticipated by Akram et al. (US2004/0035712).

In regards to claim 1, Akram et al. discloses a processing apparatus with a first electrode (152), a second electrode (122), a substrate (120) between the first and second electrode, a shower head (130) between first electrode (152) and substrate (120) forming part of a current path between electrodes (Fig. 2, paragraphs [0046]-[0047]).

In regards to claim 3, Akram et al. discloses a shower head (130) has a plurality of holes (138, Fig. 6).

In regards to claim 4, Akram et al. discloses a shower head surface (136) is substantially parallel to the substrate (120, Fig. 2).

In regards to claim 5, Akram et al. discloses a circulation mechanism (**156**) which recovers the chemical solution discharged from a shower head (**130**) and supplies the chemical solution again to shower head (Fig. 2, paragraph [0050]).

In regards to claim 6, Akram et al. discloses a method arranging a first electrode (**152**) and a second electrode (**122**) between a substrate (**120**), arranging a shower head (**130**) between first electrode (**152**) and substrate (**120**) forming part of a current path between electrodes (Fig. 2, paragraphs [0046]-[0047]).

In regards to claim 7, Akram et al. discloses a method as in claim 6, including the method of anodizing the substrate (paragraph [0002]).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-7 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Atoji (US Patent 5,876,497) in view of Akram et al.

In regards to claim 1, Atoji teaches a processing apparatus (Fig. 6B) with a first electrode (**605'**), a second electrode (**606'**), a substrate (**600'**) between the first and second electrode, and chemical solution providing part of a current path between the first and second electrodes (**606' and 605'**).

However, Atoji does not teach an apparatus including a shower head.

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Akram et al. teaches the use of a shower head in an electrochemical apparatus. Akram et al. teaches that solution flow (such as described by Atoji, Fig. 6B and col. 7, lines 1-31) can lead to non-uniformities in current density and solution concentrations developed (Akram et al., paragraph [0002], [0014], [0015] and [0018]). Therefore, the shower head was created to provide a uniform environment for electrolytic processing by Akram et al. It would have been obvious to one of ordinary skill in the art at the time of invention to modify Atoji's apparatus with Akram et al.'s shower head so that the substrate can be intimately and uniformly contacted with electrolytic solution (paragraph [0017]).

In regards to claim 2, Atoji teaches solution between a second electrode (**606'**) and a substrate (**600'**); a shower head can be applied for the same reasons as stated above for claim 1.

In regards to claims 3 and 4, Akram et al. teaches a shower head (**130**) that has a plurality of holes (**138**, Fig. 6) and a shower head surface (**136**) that is substantially parallel to the substrate (**120**, Fig. 2). These features are provided for the same reasons as stated above for claim 1.

In regards to claim 5, Atoji does not teach a circulation mechanism to recover chemical solution.

Akram et al. teaches a circulation mechanism (**156**) which recovers the chemical solution discharged from a shower head (**130**) and supplies the chemical solution again to shower head (Fig. 2, paragraph [0050]). It would have been obvious to one of ordinary skill in the art to modify Atoji's apparatus with Akram et al.'s circulation

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mechanism in order to recycle solution and lead to a continuous process. See MPEP 2144.04 V E. Furthermore, it is well known in the art to replenish the solution with fresh materials lost by deposition onto the substrate as well as to filter out solids (Akram et al, paragraph [0050]).

In regards to claim 6, Atoji teaches a method arranging a first electrode (**605'**) and a second electrode (**606'**) between a substrate (**600'**), between the first and second electrode, and chemical solution providing part of a current path between the first and second electrodes (**606' and 605'**).

In regards to the feature of arranging a shower head between first electrode (**605'**) and substrate (**600'**), Akram et al. is applied for the same reasons as stated above for claim 1.

In regards to claim 7, Atoji teaches a method as in claim 6, including the method of anodizing the substrate (col. 7, lines 1-2).

In regards to claim 17, Atoji teaches a method of semiconductor substrate manufacturing anodizing to form a porous layer (col. 7, lines 1-2), forming a non-porous layer on the porous layer, bonding the first substrate having the non-porous layer to a second substrate via an insulating layer to prepare a bonded substrate stack, processing or fabricating the bonded substrate stack to obtain a state in which the porous layer at least partially remains on the second substrate (abstract).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nicholas A. Smith whose telephone number is (571)-

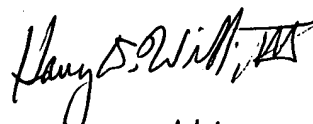
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272-8760. The examiner can normally be reached on 8:30 AM to 5:00 PM, Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy King can be reached on (571)-272-1244. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

NLS


Harry D. Wilkins, III
Primary Examiner
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